



Regime shifts and heterogeneous trends in malaria time series from Western Kenya Highlands

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Abstract:

Large malaria epidemics in the East African highlands during the mid and late 1990s kindled a stream of research on the role that global warming might have on malaria transmission. Most of the inferences using temporal information have been derived from a malaria incidence time series from Kericho. Here, we report a detailed analysis of 5 monthly time series, between 15 and 41 years long, from West Kenya encompassing an altitudinal gradient along Lake Victoria basin. We found decreasing, but heterogeneous, malaria trends since the late 1980s at low altitudes (1600 m). Regime shifts were present in 3 of the series and were synchronous in the 2 time series from high altitudes. At low altitude, regime shifts were associated with a shift from increasing to decreasing malaria transmission, as well as a decrease in variability. At higher altitudes, regime shifts reflected an increase in malaria transmission variability. The heterogeneity in malaria trends probably reflects the multitude of factors that can drive malaria transmission and highlights the need for both spatially and temporally fine-grained data to make sound inferences about the impacts of climate change and control/elimination interventions on malaria transmission.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3252560>

Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, El Nino Southern Oscillation, Other Exposure

Other Exposure: dipole mode index

Geographic Feature:

resource focuses on specific type of geography

Other Geographical Feature

Climate Change and Human Health Literature Portal

Other Geographical Feature : highlands

Geographic Location: 

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Country

Other African Country: Kenya

Health Impact: 

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Malaria

Mitigation/Adaptation: 

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: 

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type: 

format or standard characteristic of resource

Research Article

Timescale: 

time period studied

Short-Term (

Vulnerability/Impact Assessment: 

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content